



See the photo-clinic by Arabizadeh et al (doi: 10.34172/jpd.2023.11200)

Brown tumor in hyperparathyroidism; a new look at an old problem



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Implication for health policy/practice/research/medical education:

Brown tumors are uncommon in general (around 0.1%), however they tend to be more common in people with primary and secondary hyperparathyroidism.

Keywords: Brown tumor, Primary hyperparathyroidism, Secondary hyperparathyroidism

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I recently read the paper by Arabizadeh et al (1), on “the pathology of brown tumor in a 36-year-old man on maintenance hemodialysis” with great interest. Regarding this study, I would like to expand the discussion with more recent data on this topic. The term “brown tumor” is a misnomer since it is not a real neoplasm. It was originally used to describe the tissue specimen's typical dark reddish-brown color, which occurs due to vascularity, hemorrhage, and deposits of the pigment hemosiderin. In recent years, the brown tumor diagnosis has become less prevalent (decreased from 80% in the past to 15% in the present), due to improved techniques for screening and more frequent early detection of hyperparathyroidism. Brown tumors are uncommon in general (around 0.1%), but they tend to be more common in people with primary and secondary hyperparathyroidism. Regarding skeletal problems, brown tumors are observed in 4.5% of patients with primary hyperparathyroidism and 1.5–1.7% of patients with secondary hyperparathyroidism suffering from chronic renal disease. In comparison to males, women are more likely to develop brown tumors (2). The incidence increases with aging, with postmenopausal women reporting the majority of instances at ages higher than 50. This may be related to hormonal imbalances, which may be more common in females than males (3).

Brown tumors can affect any skeletal component and can be solitary or multiple. The ribs, clavicle, tibia, femur, pelvic girdle, and hands are the skeletal structures that brown tumors most commonly affect, with the maxillo-

facial bones contributing to just 4.5% of cases. The most typical site of primary hyperparathyroidism-associated maxilla-facial brown tumors is the mandible. Differential diagnoses of brown tumors include osteolytic metastasis, infectious diseases (bone abscess and osteomyelitis), cancer, aneurysmal bone cyst, giant cell tumors, and lesions from multiple myeloma (4). When Brown tumors are located at unusual localization, the diagnosis might be much more challenging. For the differential diagnosis of brown tumors in primary hyperparathyroidism, a multidisciplinary approach including clinical, laboratory, histologic, and imaging findings are needed. During the diagnosis process and the follow-up, imaging techniques including X-rays, computerized tomography (CT) scans, and magnetic resonance imaging (MRI) should be conducted in combination. On X-ray, brown tumors exhibit a well-defined, translucent, lytic lesion with a thin or weakened cortex, without specific signs. On either CT or MRI, they could not reveal any characteristic changes. Only solid, mixed solid, and cystic, or cystic lesions may be detected. The diagnosis mainly relies on biopsy and excessively increased parathyroid hormone (5).

Treatment for hyperphosphatemia with phosphate binders, calcimimetics or active vitamin D, and parathyroidectomy have all been found to be helpful. Patients who fail to respond effectively to parathyroidectomy and conservative therapy may need to have the tumoral masses surgically removed. This is frequently required due to aesthetic concerns and functional issues related to swallowing and chewing (6).

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Brown tumors can also result in neurological disorders and pathological fractures. Severe cases can result in dysphagia and represent a serious medical condition if not adequately treated. The conventional treatment for small, solitary, localized lesions is the biopsy of suspected lesions, followed by enucleation and curettage, including the surrounding healthy bone. Marginal or segmental resections are performed on more extensive lesions, such as multiple lesion areas and lesions with unclear margins. A minimally invasive surgical resection is the treatment of choice as there have been no occurrences of tumor mass recurrence subsequent resection of malignant changes. Radical resection may still be required in some situations with large progressed lesions (7).

However, the management of brown tumors still requires further investigations, hence, larger studies and more clinical trials are recommended on this subject.

Conflicts of interest

The author declares no competing interests.

Ethical issues

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